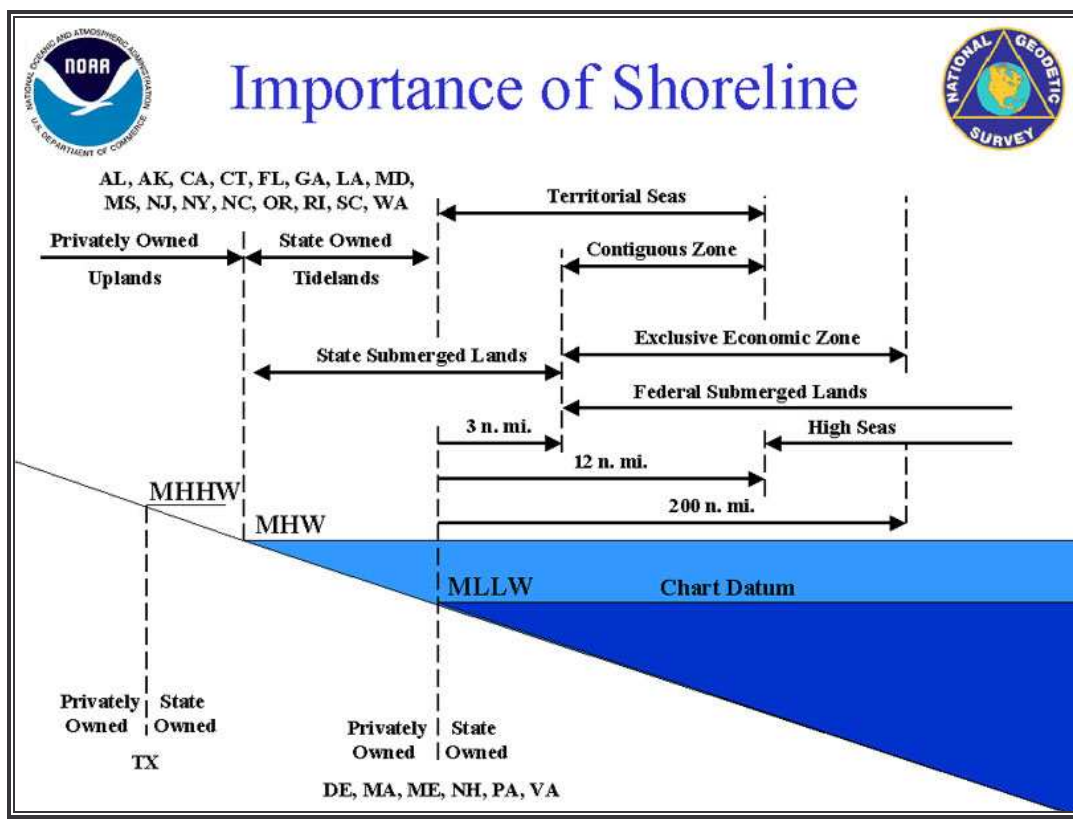


SHIFTING WATER BOUNDARIES

Presented
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September 2010

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Shoreline boundaries for various states. Courtesy of NOAA, Department. of Commerce

Shifting Water Boundaries

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Chapter 1: Introduction

Water boundaries are probably the most frequently and bitterly contested boundaries. The edge of water forms an excellent natural boundary that is easily defended and easily recognized. Because the land/water interface is dynamic, attempts to precisely locate water boundaries become a complex and legal quagmire. Consequently, unique laws and techniques have developed for defining and locating water boundaries and the determination of water boundary lines between adjacent property owners is confusing.

The conveyance of title frequently contains a reference to water boundaries with varying terms. The result is the courts and land surveyors are called upon from time to time for precise and workable interpretations of these vague and ambiguous phrases.

Chapter 2: Slow and Imperceptible Changes

The general legal principals concerning water boundaries and the ownership of lands with shifting boundaries were settled by common law in England before the United State gained independence. These general rules are still followed in the United States with some modifications to fit special circumstances.

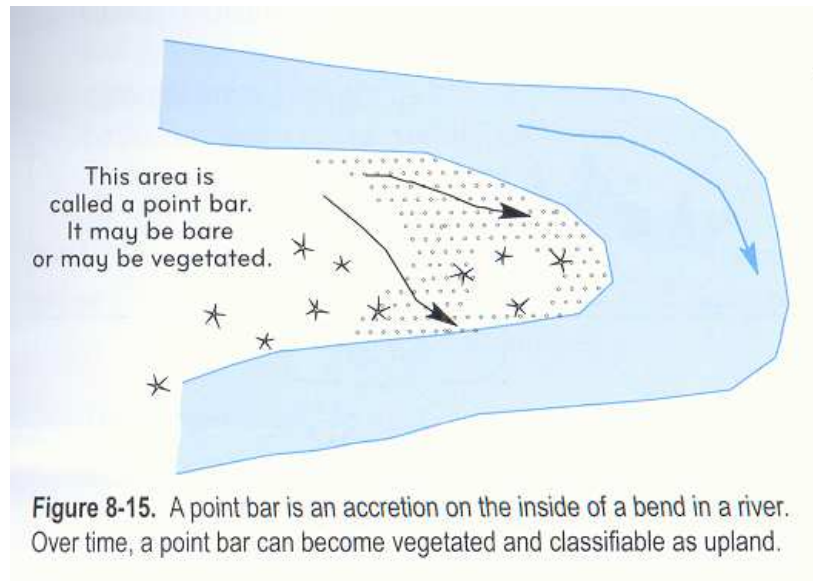
The common law supplies a moving boundary rule in the case of slow and imperceptible changes. This rule states that when a watercourse serves as a boundary and the slow and imperceptible changes result in the gradual movement of the line of ordinary high water between the uplands and the submerged lands will result in a corresponding shift in the boundary.

The types of slow and imperceptible processes include erosion, reliction, and accretion.

Accretion

Accretion is the gradual extension of land by deposition of soil through natural causes and is formed by the washing up of sand, silt, or soil so as to form firm ground called alluvium. The common law supplies a moving boundary rule and the legal effect is that the upland owner is constantly gaining property as their water boundary is exposed to the flowing waters. Accretion will result in a shift in the boundary and the new lands must be divided by the principles of apportioning. For legal purposes, the accretion will begin when the vegetation and other evidence for the line of ordinary high water move into the exposed areas. The typical seasonal drawdown or a drought of a short duration would not be considered as accretion.

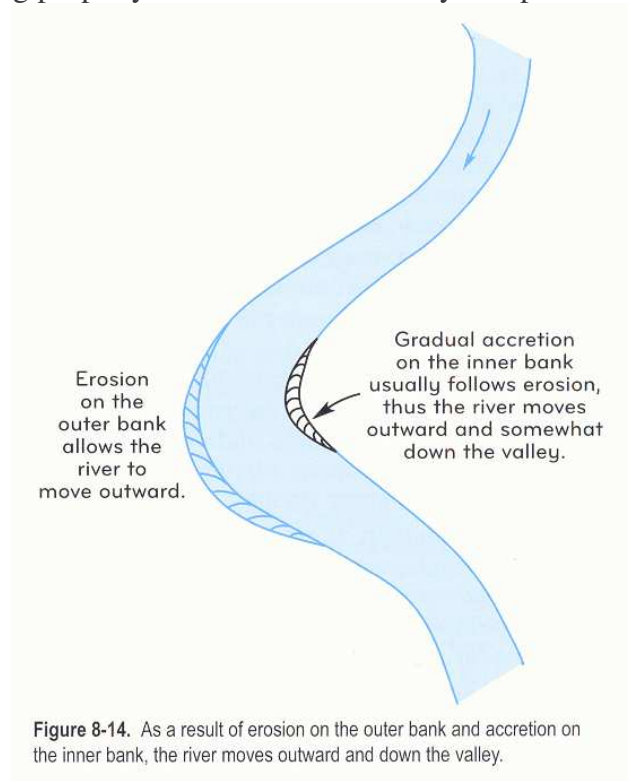
Within rivers, the hydraulics of flowing water setups the mechanism for accretions and erosion. The fastest water is along the outside of a river bend which erodes the soft material in the banks. When the water slows down, the suspended particles tend to drop to the bottom in the deep pools or near the inside of a river bend. In naturally flowing rivers, the velocity and the discharge volume are never constant, so the rates of erosion and accretion are changing all of the time and at different places along the bank.



Courtesy of 2009 BLM Manual of Surveying Instructions

Erosion

Erosion is the opposite of accretion, where by the gradual eating or gnawing away of soil by the operation of water, so that the water encroaches upon an area that was dry land prior to the erosion. The common law supplies a moving boundary rule and the legal effect is that the upland owner is constantly losing property as their water boundary is exposed to the flowing waters.

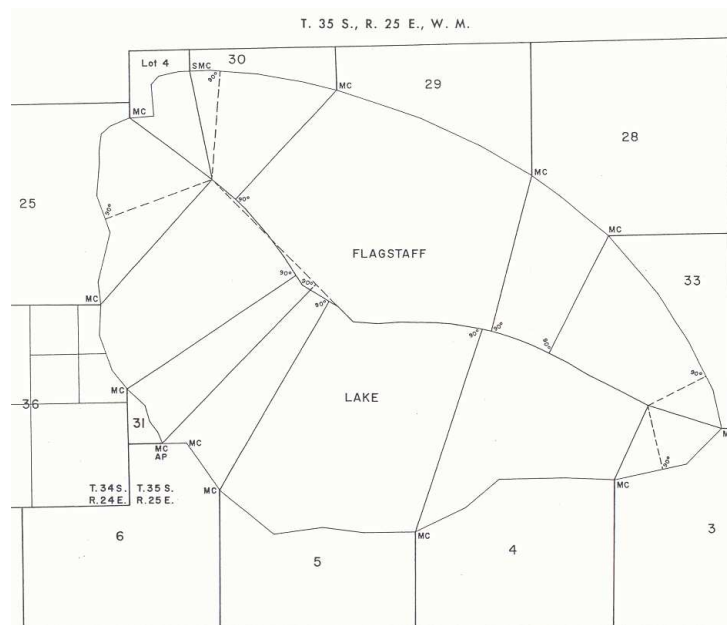


Courtesy of 2009 BLM Manual of Surveying Instructions

Reliction

Reliction is the formation of dry land by the slow and imperceptible withdrawal of water from the shores of a river or lake and the ownership to the new dry land area follows the same principles as those used in the ownership of accreted lands. The common law supplies a moving boundary rule and the legal effect is that the upland owner is constantly gaining property as their water boundary is exposed to the flowing waters. Reliction will result in a corresponding shift in the boundary and the new lands must be divided by the same principles of apportioning.

Sometimes reliction is referred to as emergence or as dereliction. For legal purposes, the reliction will begin when the vegetation and other evidence for the line of ordinary high water move into the exposed areas. The typical seasonal drawdown or a drought of a short duration would not be considered as reliction.



Flagstaff Lake in Oregon – Courtesy of BLM Public Lands Surveying – A Case Book

Legal principals

Court decisions relating to the accreted lands or relictied lands have taken an approach, more consistent with federal law, which awards accretions to the adjacent owners. At the same time, the courts recognize that the endless variations of shorelines within this state will present many questions concerning ownership, which cannot be determined by any one fixed rule, however elastic.

This statement was relied upon in the 1973 case of *Hudson House v. Rozman* that concerned accretions at the mouth of the Copalis River. In this example, accretions to the ocean beach diverted the river to the north eventually replacing ocean frontage on the north side of the river with river frontage. The court stated "In such cases the fundamental consideration of preserving

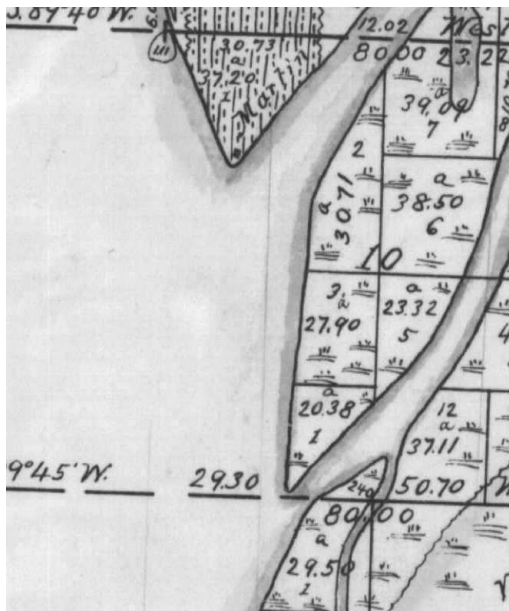
frontage on the water will override the usual rule by which accretions belong to the land to which they adjoin.” and the court extended the southerly boundary of the property on the north side of the river across the river to the ocean.

Accretion - A special case in Washington Legislation

The typical common law principal is that the accretions must attach to the upland, which was bounded by the waters which formed the accretion. But in the case of accretions that attach to submerged lands, Washington State has adopted statutes that can deprive the tidelands and shoreland owner from gaining title to the accretions.

In RCW 79.125.440, Tidelands or shorelands — Accretions — Lease; states, "accretions that may be added to tracts of tide or shore lands heretofore sold or that may hereafter be sold, by the state shall belong to the state". It seems that this law would deny tideland or shoreland owner's accretions, thus possibly cutting off their waterfront access.

Detached tidelands and shorelands (sand bars or low islands) were separated from the upland by navigable waters and were sold at five dollars per acre. Each sale required a survey, a plat, and a legal description provided by the applicant. It is very common to find these parcels in the Columbia River and the parcels were used for fish wheels or duck hunting, etc. These detached parcels (excluding oyster lands) do exist throughout Puget Sound in some of the shallow portions of bays.



GLO Plat from 1854



Pratt Island sold as detached tidelands

As a practical matter, the only reasonable application of RCW 79.125.440 might be in the case of accretions to tide or shoreland tracts that were surveyed and platted or described by metes and bounds. The typical sale of second class tidelands and shorelands that were described as fronting

and abutting a portion of the meander line; it would be very difficult to apply this provision without the benefit of a survey performed at the time of sale.

The 1946 Washington Supreme Court case of *Ghione v. State* recognized that this statute applies only to accretions that occur after the tidelands or shorelands are sold. It also held that the statute does not contemplate "accretions in the ordinary sense of the term, that is, accretions to uplands, but, on the contrary, relates to accretions to tide and shorelands, and therefore accretions, by definition, situate below the line of ordinary high tide or ordinary high water."

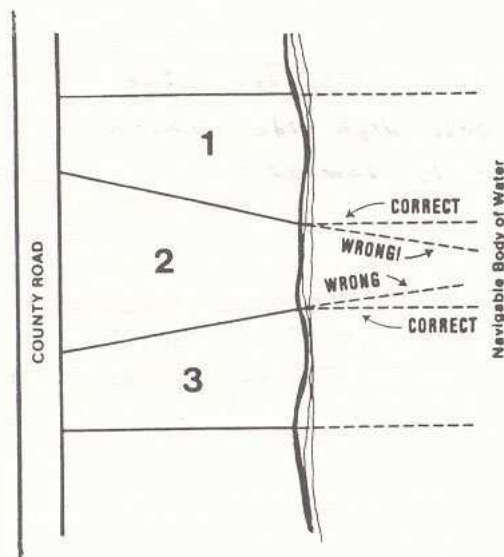
Apportioning of Accretion and Reliction

In dividing the accretion or reliction among the various riparian owners on the same side of the body of water, the objective is to do so with equity and justice to each owner. Two primary factors must be considered in making the equitable distribution, which are:

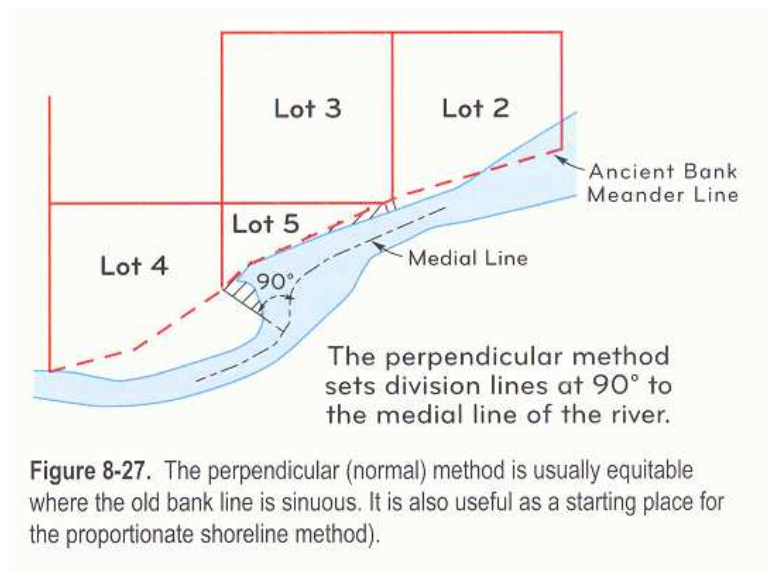
- 1) The owners shall have an equal share, in proportion to the length of the newly formed lands.
- 2) To preserve access to the water.

If the parties are unable to agree to the location of a common boundary line between their respective tidelands or shorelands, that line may be determined only by a survey made in accordance with the rules as governed by the following guidelines and principles:

- The prolongation of the property line method is to simply extend the property line until they reach the new water's edge, but this method is rarely used since the method is unlikely to provide equity and justice.

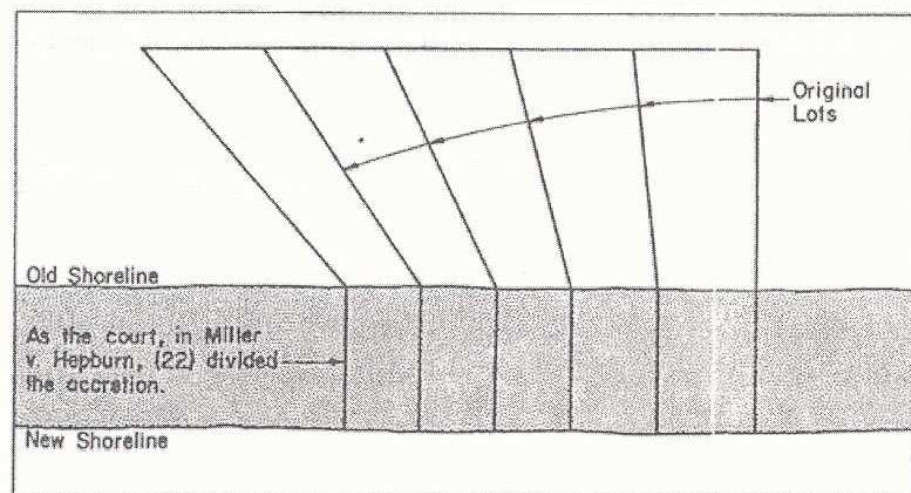


Differences between the perpendicular method and the upland extension method.
Courtesy of 1973 BLM Manual of Surveying Instructions



Courtesy of 2009 BLM Manual of Surveying Instructions

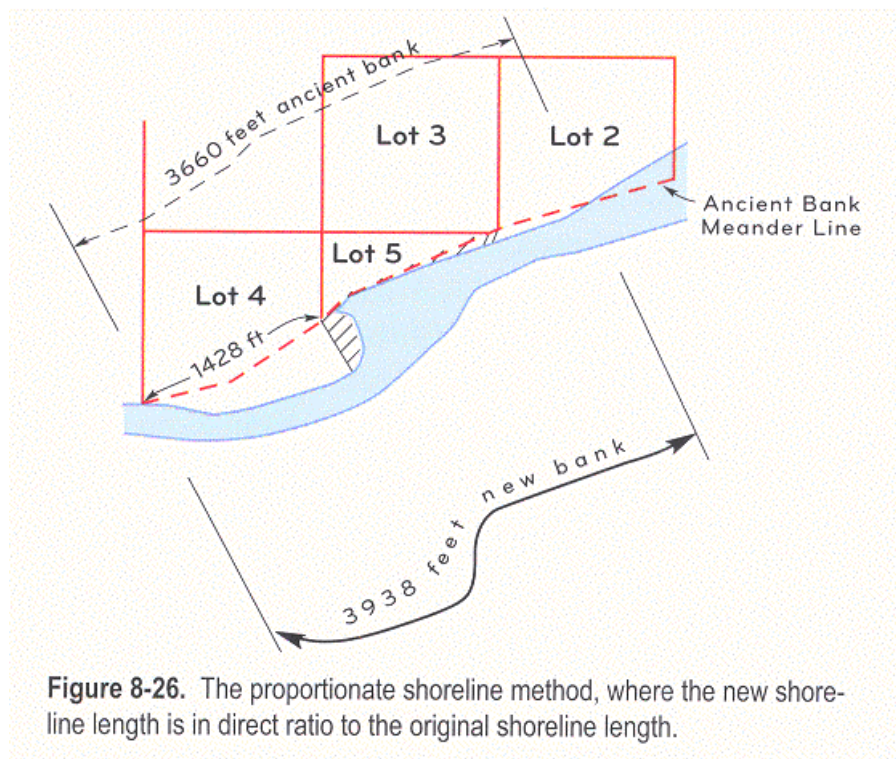
- The division of the accreted lands may be divided between adjoining owners by erecting lines perpendicular to the general course of the shoreline or the medial line only in cases where the shoreline is substantially straight. The perpendicular method is a line drawn from the boundary point on the original shoreline perpendicular to the new shoreline. This method is also the preferred method used to divide the stream bed between riparian owners on a non navigable stream.



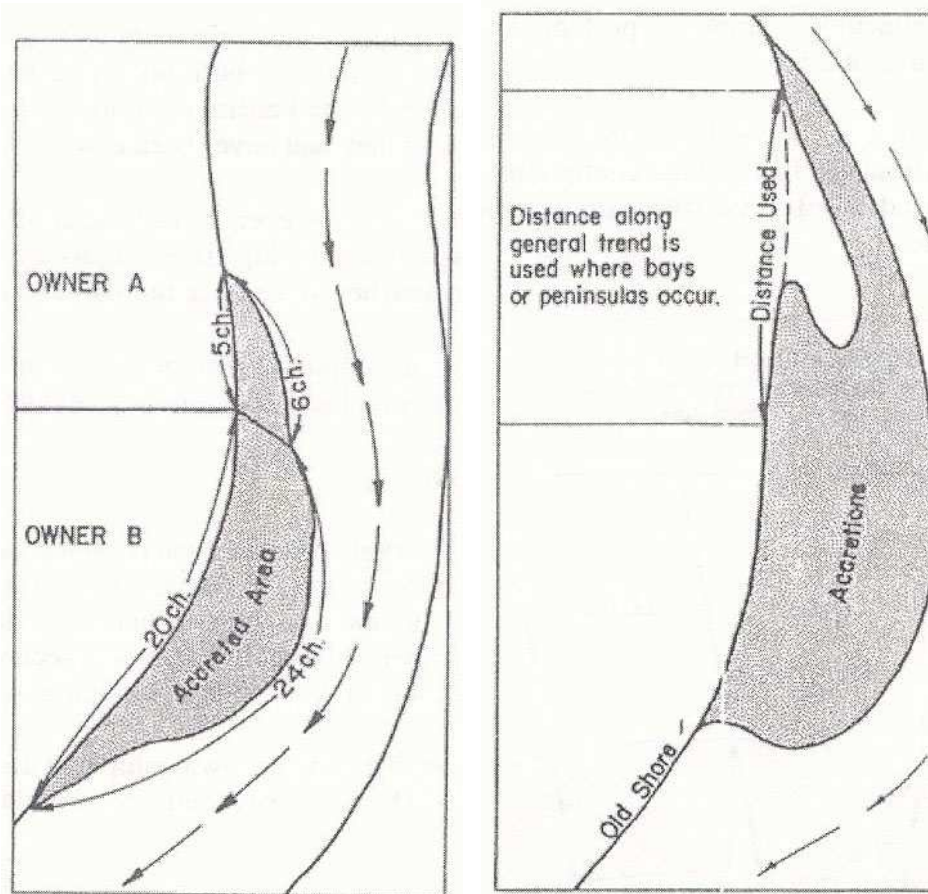
The perpendicular method; courtesy of 1973 BLM Manual of Surveying Instructions

- The proportionate shoreline method is to apportion the new frontage along the water boundary in the same ratio as the former line of the old water boundary. Certain modifications may be required where peninsulas or bays would make strict apportionment

inequitable. This method is used by the Federal government and by a majority of the States and is outlined in the 2009 Manual of Surveying Instructions in Section 8-133. This section is based on the 1861 federal case of *Johnson v. Jones* by that states "Apportionment of accreted lands is usually made by proportioning the new frontage in the same ratio as the frontage of the old shore". Each upland owner is entitled to an equitable share in the adjoining accreted lands having regard only to the length of the shoreline. Therefore the direction of the division lines is derived by the general rule for apportioning and each owner is entitled to a length of shoreline at the new OHW line that is in proportion to the original length of the old OHW.

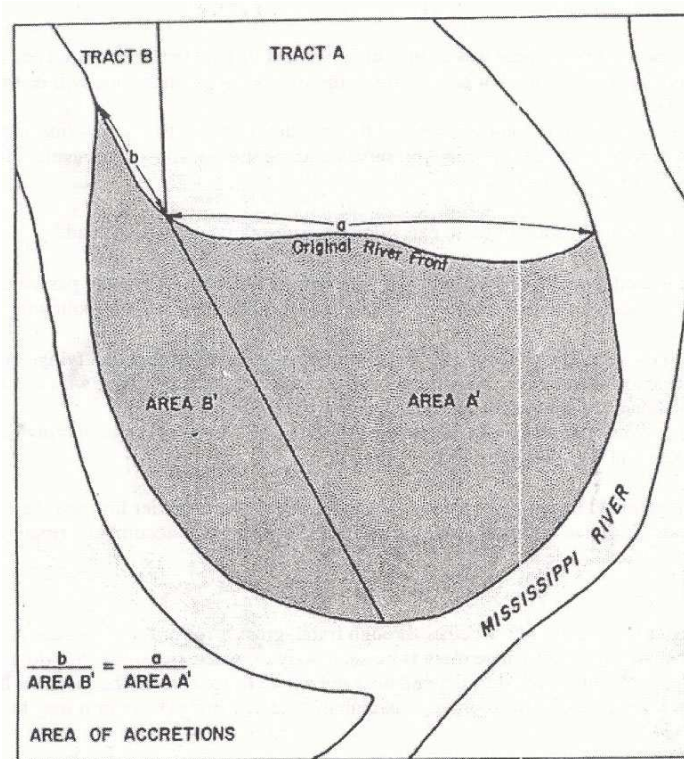


Courtesy of 2009 BLM Manual of Surveying Instructions



Modifications required with the proportionate shoreline method.
 Courtesy of 1973 BLM Manual of Surveying Instructions

- The proportion acreage method has been used where the accreted land is more valuable than the length of the waterfront. In this method contiguous riparian owners each take their proportionate share based upon the total extent of their front lines related to the total quantity of accreted land to be divided.



The proportion acreage method; Courtesy of 1973 BLM Manual of Surveying Instructions.

Chapter 3: Rapid and Perceptible Changes

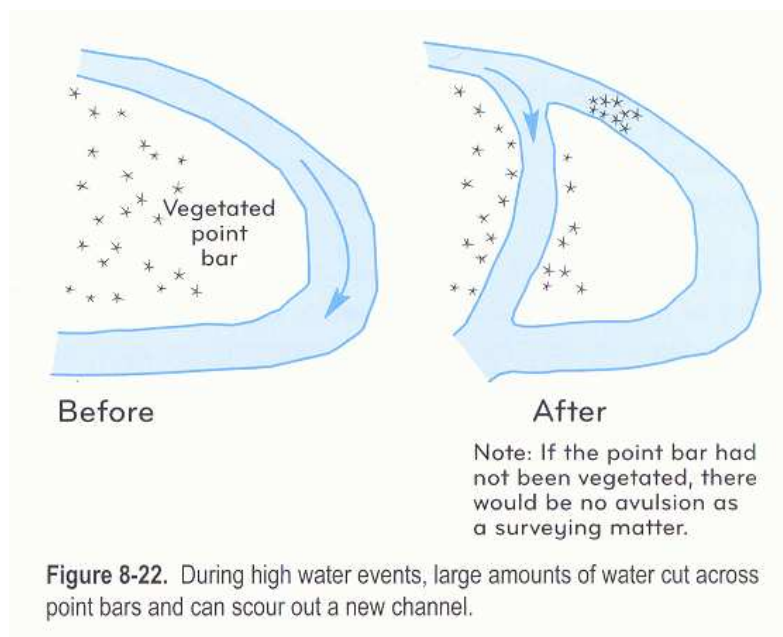
Avulsion

In contrast, in the case of changes to a water body where the changes are rapid and perceptible, the common law principle for avulsion will not result in a shift in the boundary line. Avulsion causes the removal of a considerable quantity of soil from the land of one owner and deposits it upon the dry land of another. This may be a sudden or rapid change in the course and channel of a river or the sudden creation of a completely new channel. It is distinguished from accretion and erosion by the time element.

The legal effect is that each landowner's boundary is fixed at its location as of the date of the avulsive event and the avulsion is complete when no water flows in the abandoned channel. Prior to the avulsive event, the abutting owners owned to the original banks and they will continue to own to the original banks after the avulsion. In the case of a navigable river, the state remains the owner of the original river bed as it existed prior to the avulsion and the land positioned under the new channel is still owned by the person who owned the lands prior to the avulsion, but the lands

are subject to a public easement for navigation. If a stream is non navigable, the owners on each side of the stream own to the center of the stream before the avulsion and they continue to own to the center of the dry streambed.

While Washington courts have not specifically ruled as to whether or not the common law rule of avulsion applies to navigable waters in this state, there is no reason to suspect it would not apply. On navigable rivers this leaves the state with ownership of the abandoned bed, but creates the question of whether the state also owns the new bed because it is now the bed of the navigable river. For example, in the 1978 case of *State v. Corvallis Sand & Gravel Co*, Oregon contended that the state owned all beds and shores of navigable waters regardless of accretion or avulsion, but the Oregon court determined that the state did not own the bed of the Willamette River in its present location, where the change resulted from avulsive action.



Courtesy of 2009 BLM Manual of Surveying Instructions

There may be a problem determining whether an avulsion has occurred and the legal effect to the boundaries is a definite requirement. An avulsive change cannot be assumed to have occurred without positive evidence; otherwise it must be presumed that the changes have been caused by erosion and accretion (Sec. 8-97, 2009 Manual of Surveying Instructions)

The initial challenge in an investigation is rather the occurrence is legally classed as an avulsion. Investigative methods used to make a determination are by age dating vegetation, old newspaper accounts about flood events, historical aerial photos, eye witness accounts, old surveys, and testimony. Another challenge is to determine with certainty the position of the river prior to the avulsion and it is difficult to distinguish between accretions that occurred along the abandoned channel from the effect of avulsion. Finding the upstream and downstream limits of the avulsion is

puzzling and there is little legal guidance on the selection of the limits. Finally, the division line down the old river bed is usually a medial line between the original fixed banks.

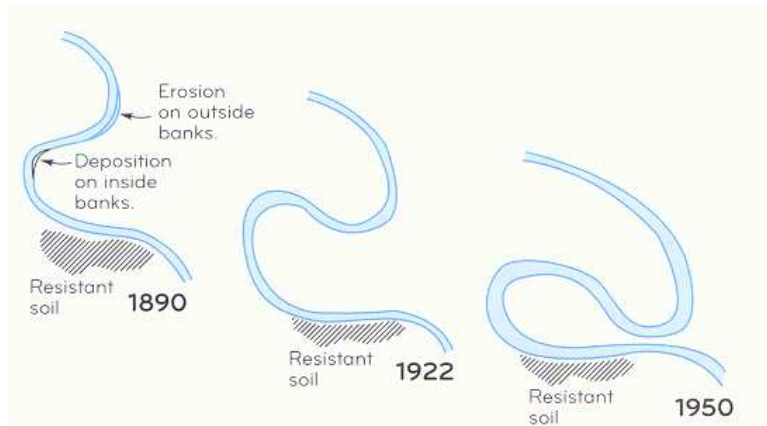


Figure 8-16. The beginnings of an avulsion. River meanders move outward and downstream unless they are impeded by a solid object such as extremely resistant soil or rock.

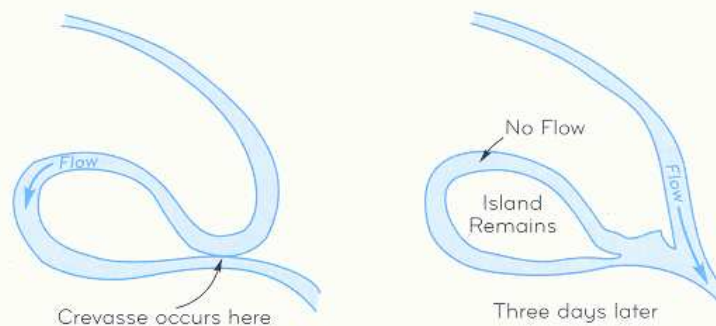


Figure 8-17. As the meander loops tighten, the narrow neck finally breaks through and the eroding waters tear out the "shortcut."

Courtesy of 2009 BLM Manual of Surveying Instructions

Inundation

Inundation is the flooding of uplands and aquatic lands by the construction of dams, locks, or other structures and is treated like an avulsion, whereby the property boundaries remain fixed. The proponent(s) of an inundation project will be required to compensate the existing owners and in the case of state owned aquatic lands, must obtain a right to overflow easement for the state owned beds and shores that will be flooded.

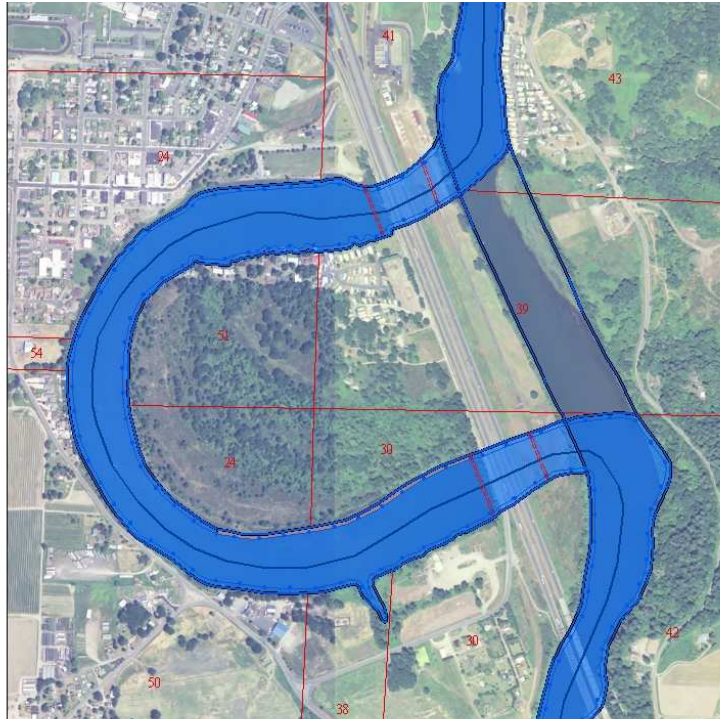
An example is Lake Tapps in Pierce County that was expanded for power generation by diversion of waters from the White River via a canal that begin outside of Buckley.



Lake Tapps in Pierce County based upon 1872 GLO meanders.

Excavation of Canals and Waterways

At many locations in the State, canals or waterways were constructed for various project benefits; either for improving a waterway, for flood control, or highway alignments, etc. Often, these construction projects were authorized by either special legislation or a quasi-government entity such as a Commercial Waterway or Port District or by authorities granted to state agencies. For example, WSDOT was assigned the duties of the former Canal Commission, which include “construct, maintain, and/or operate any navigation canal, or navigation canal systems deemed feasible by the department of transportation.” The powers and duties are found in RCW 47.72, which define a “Canal is any waterway for navigation created by construction of reservoirs or construction of channels by excavation in dry ground, in streams, rivers or in tidal waters and any existing waterway incorporated into such a canal and including any appurtenant features necessary for operation and maintenance of the canal.”



Cowlitz River bypass is not State owned aquatic lands!

Most citizens are aware of the Lake Washington Ship Canal, but many other canals were constructed that today appear as a natural water feature. For example, the Cowlitz River bypass channel for I-5 located at Woodland, WA. At this site, a 2200 foot long bypass was excavated across uplands to bypass the large oxbow bend known today as Horseshoe Lake. Much of the material was used to fill the bed of the old river for the Interstate 5 and to improve the Woodland State Airport, which is a WSDOT managed airport.



Woodland State managed Airport with the Cowlitz River bypass is NOT the Lewis River.

Exceptions to the Common Law Rules

Accretions that occur within a harbor area would not attach to the abutting parcel because preservation of the platted harbor area is necessary and is protected under Article 15 of the Washington Constitution:

“ . . .any of the area lying between any harbor line and the line of ordinary high water, and shall be sold or granted by the state, nor its rights to control the same relinquished, but such area shall be forever reserved for landings, wharves, streets, and other conveniences of navigation and commerce.”

Conclusion

The rules pertaining to accretion, reliction, and avulsion should not be mechanically applied, but rather each case must be decided on its own facts and owners must be afforded equitable treatment.

Appendix

Court Citations

The principles of aquatic boundary location in Washington are largely derived from case law. The cases listed below obviously do not comprise the whole body of case law regarding aquatic land boundaries, but these were selected to highlight the courts emphasis on equity for all affected parties and to point out some of the complexities that may be encountered when dealing with tide and shoreline boundaries.

The courts have provided general guidelines for dealing with some potentially very complex situations. They even warn that these guidelines may not meet all conditions. A surveyor working with boundaries around navigable water is advised to exhaustively research laws, courts decisions, and historical deeds and other records and finally to make the decision based on equitable treatment of ALL affected property owners.

Hughes v. Washington, 67 Wn. 2d 799, 410 P. 2d 20 (1966)
 Hughes v. Washington, 385 U.S. 290 (1967)
 Hudson House v. Rozman, 82 Wn 2d 178, 509 P. 2d 992 (1973)
 Ghione v. State, 26 Wn 2d 635, 175 P. 2d 955 (1946)
 Johnston v. Jones, 66 U.S. 209 (1861)
 Merryman v. Goins, 124 P. 2d 729 (1942)
 Miller v. Hepburn, 71 KY 326 (1871)
 Wood v. Appal, 63 Pa. 210 (1869)
 Jones v. Hogue, 129 So. 2d. 194 (1960)
 Parker v. Farrell, 74 Wn. 2d 553, 445 P. 2d 620 (1968)
 Harper v. Holston, 119 Wn. 437, 205 P. 1062 (1922)
 State (Oregon) v. Corvallis Sand & Gravel Co., 582 P. 2d 1352 (1978)
 Strand v. State, 16 Wn. 2d 107, 132 P. 2d 1011 (1943)
 Spath v. Larsen, 20 Wn 2d 500, 148 P. 2d 834 (1944)
 State v. Corvallis Sand and Gravel, 69 Wn 2d 24, 416 P. 2d 675 (1966)

Bibliography:

Boundary Control and Legal Principles, 3rd Edition by Brown, Robillard and Wilson

Manual of Surveying Instructions by the Bureau of Land Management, 2009

Public Lands Surveying—A Casebook, Chapter D: Basic Law of Water Boundaries by the Bureau of Land Management

River and Lake Boundaries by James Simpson

Waterfront Titles in the State of Washington by George N. Peters Jr. for Chicago Title Insurance Co., 2004

Water Boundaries by George M. Cole, 1997

Washington Water Boundaries by Jerry R. Broadus